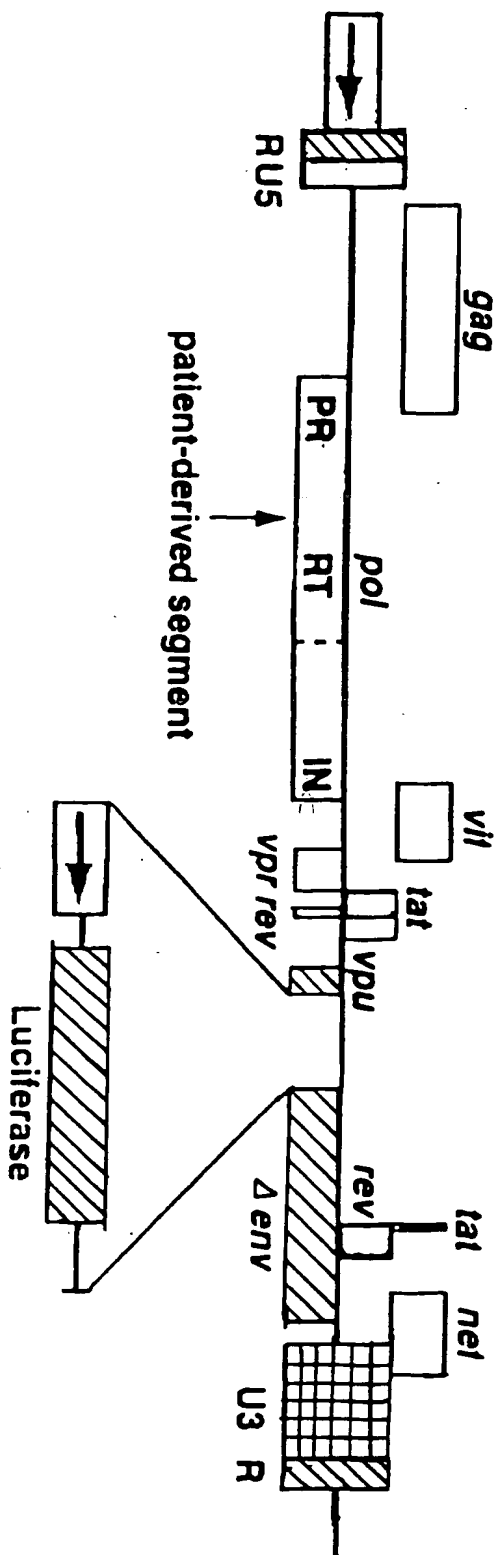


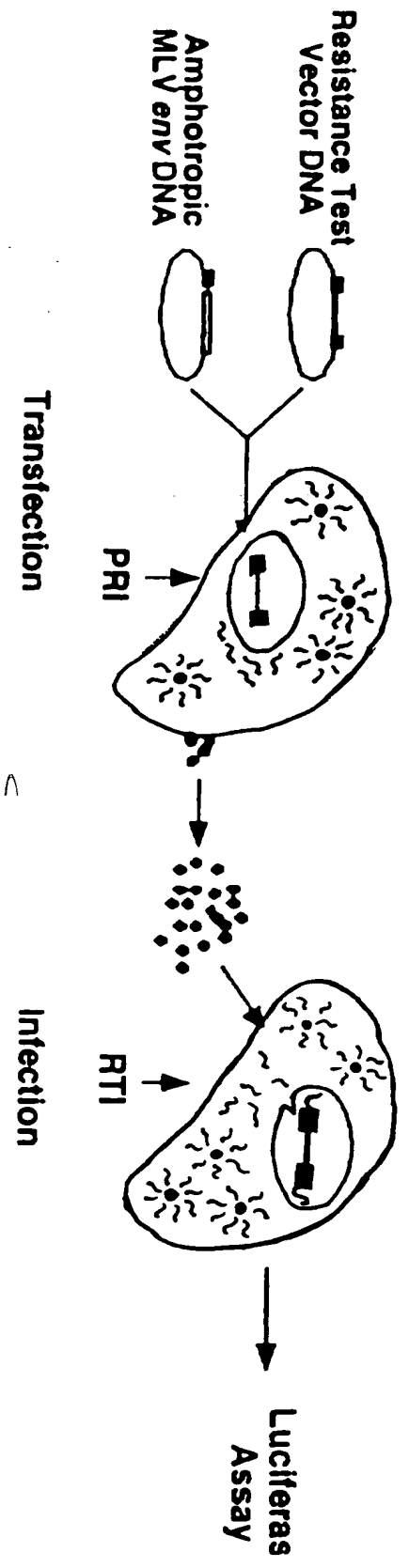
FIG. 1

PhenoSense™ HIV Resistance Test Vector.



PhenoSense™ HIV Schematic Diagram.

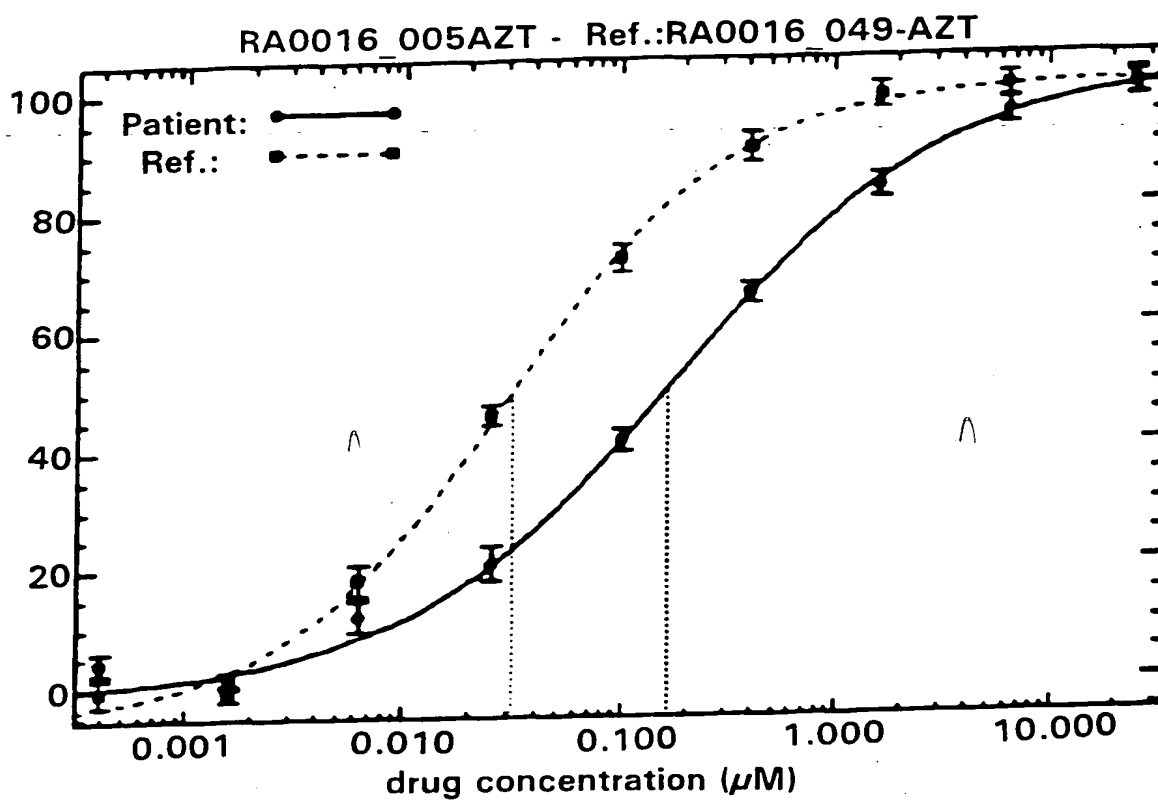
FIG. 2



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FIG. 3A NRTI - AZT

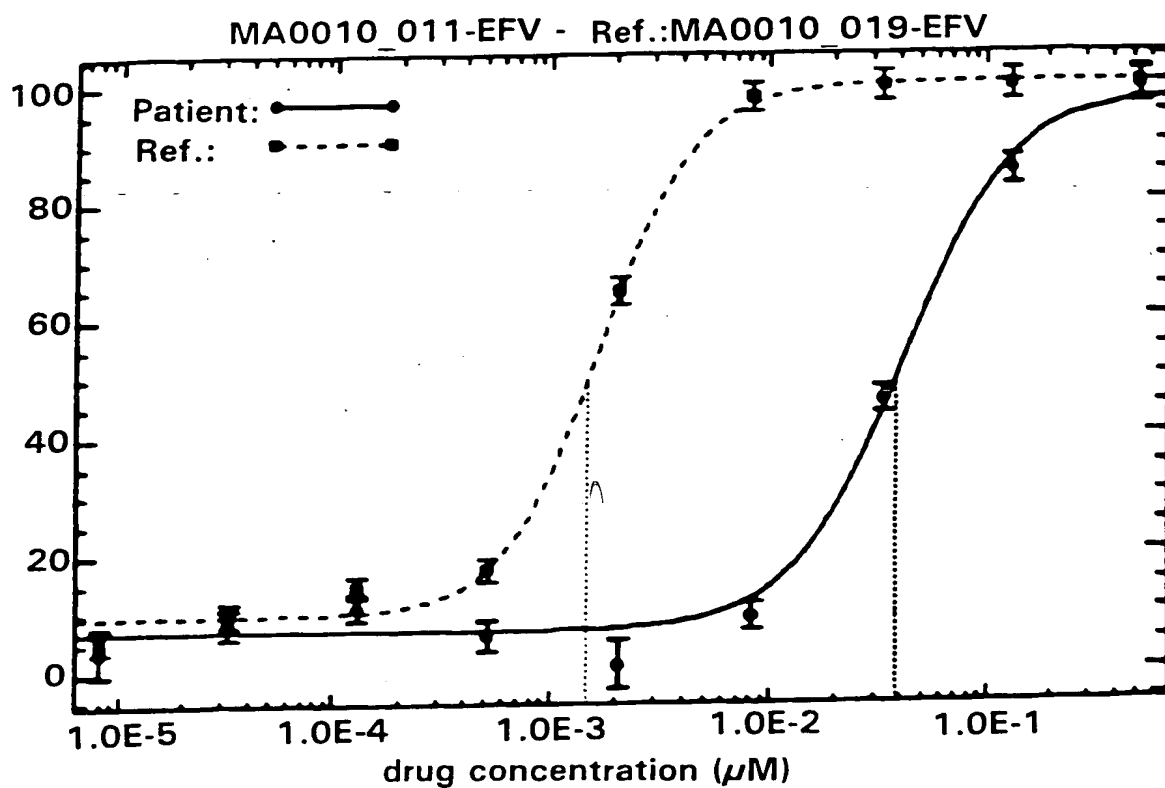


| | |
|-------------|-------------------------------------|
| AZT-Control | $\text{IC}_{50} = 0.032$ |
| AZT-Patient | $\text{IC}_{50} = 0.170$ (5.2-fold) |

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FIG. 3B

NNRTI - Efavirenz



EFV-Control

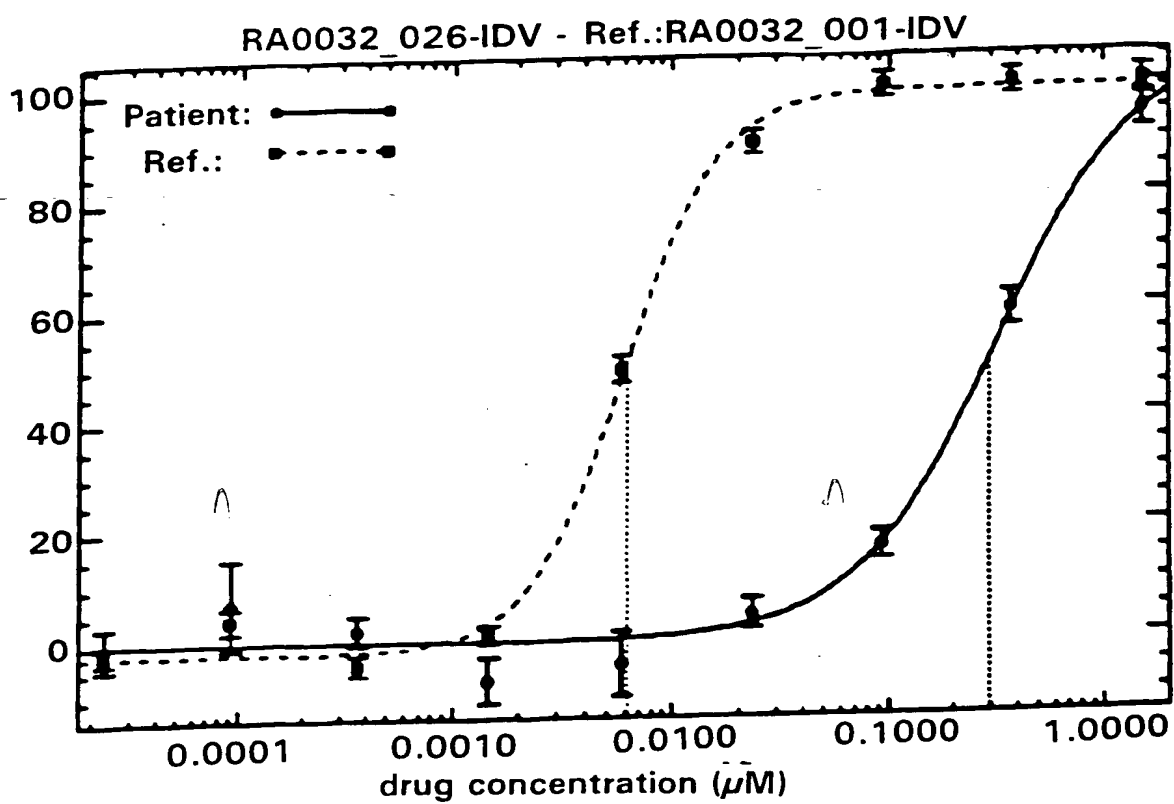
$\text{IC}_{50} = 0.0015$

EFV-Patient

$\text{IC}_{50} = 0.0380$ (25.6-fold)

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FIG. 3C PRI - Indinavir



IDV-Control
IDV-Patient

$\text{IC}_{50} = 0.0062$
 $\text{IC}_{50} = 0.2935$ (47.4-fold)

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FIG. 4A SQV

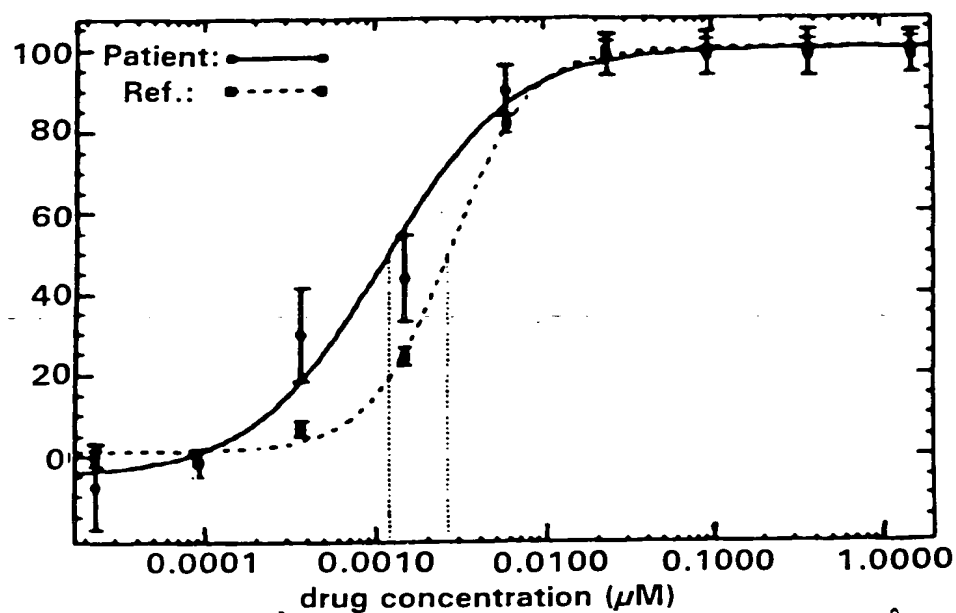
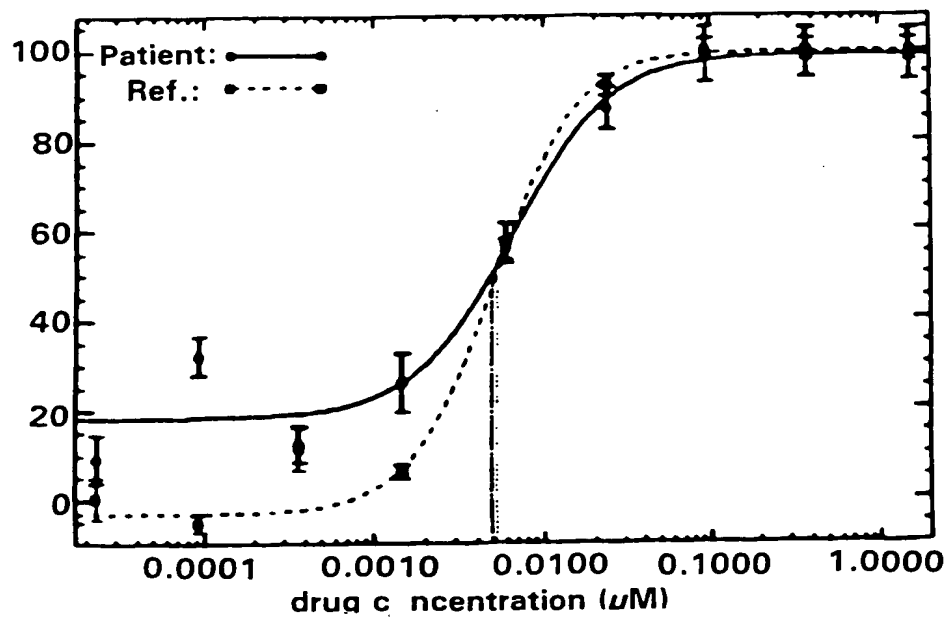


FIG. 4B IDV



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FIG. 4C RTV

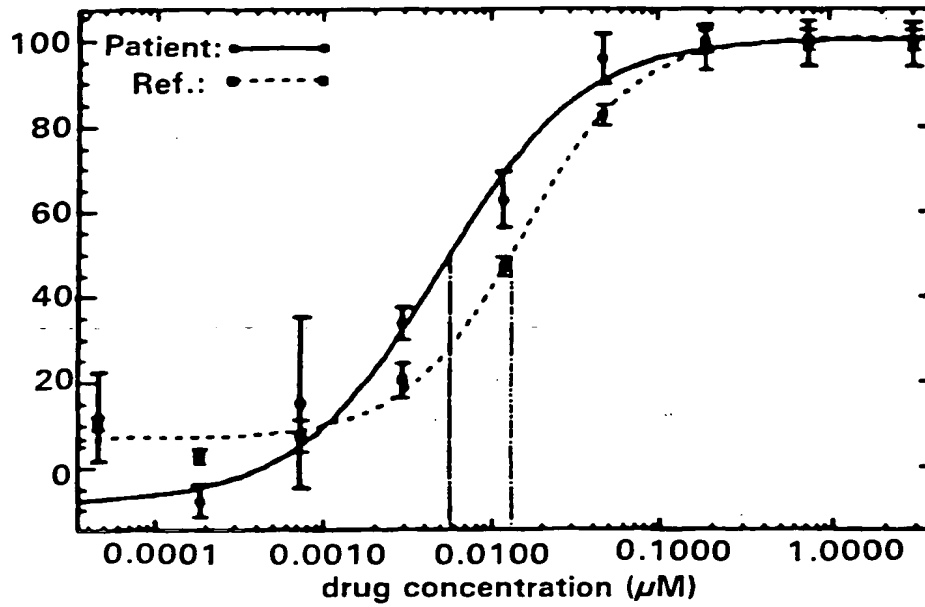
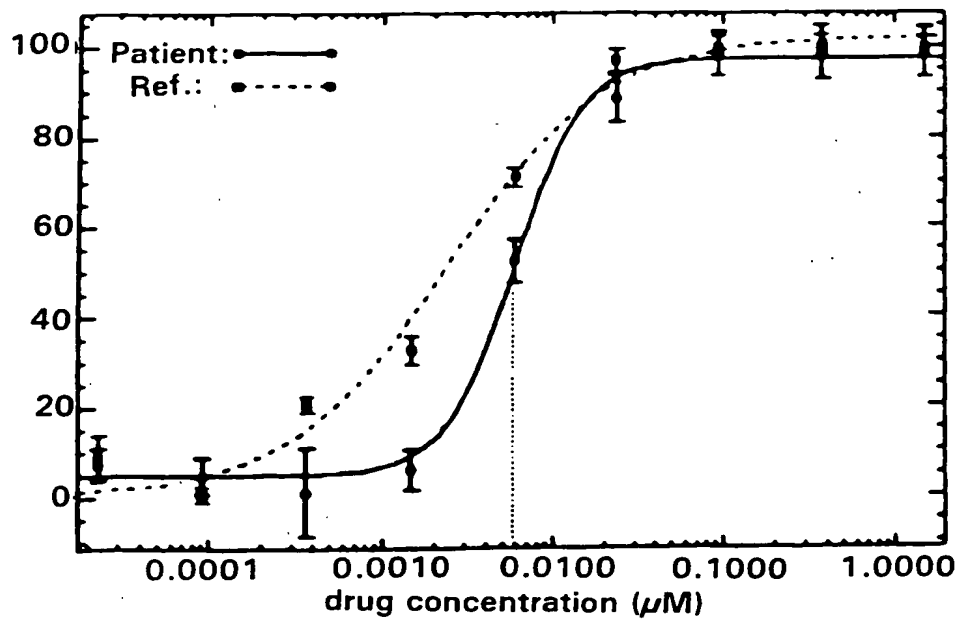
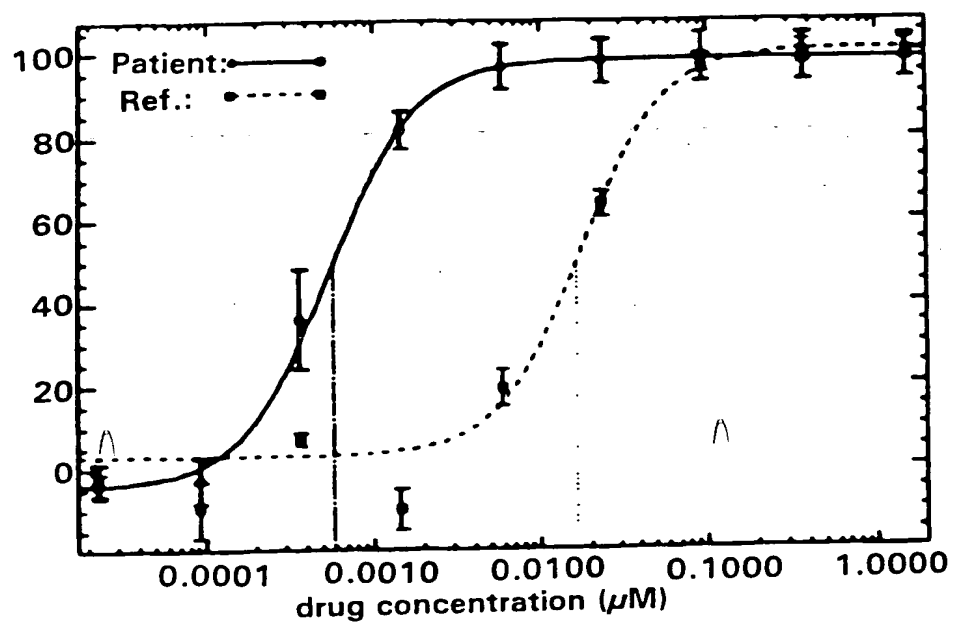


FIG. 4D NFV



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FIG. 4E AMP



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FIG. 5A SQV

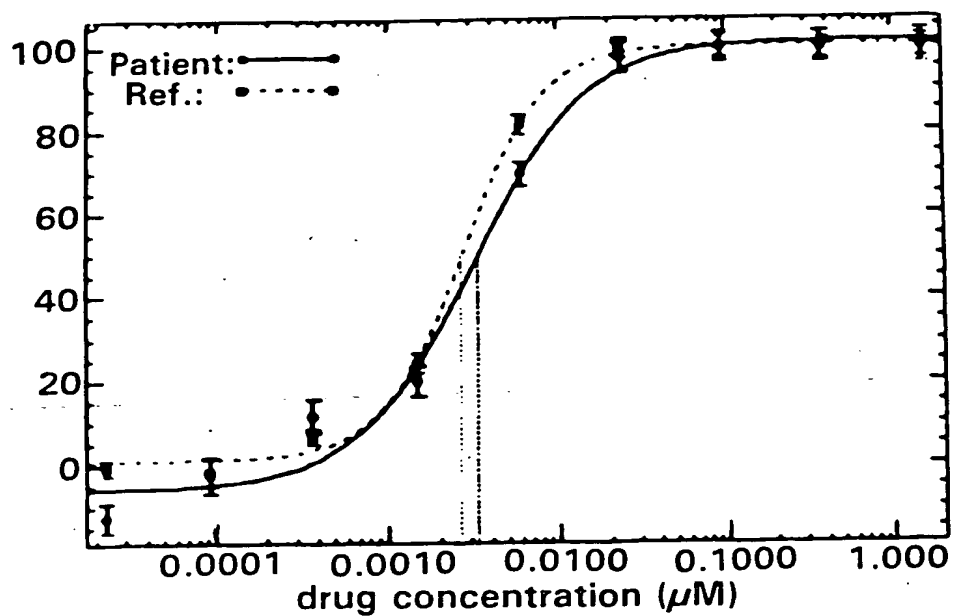
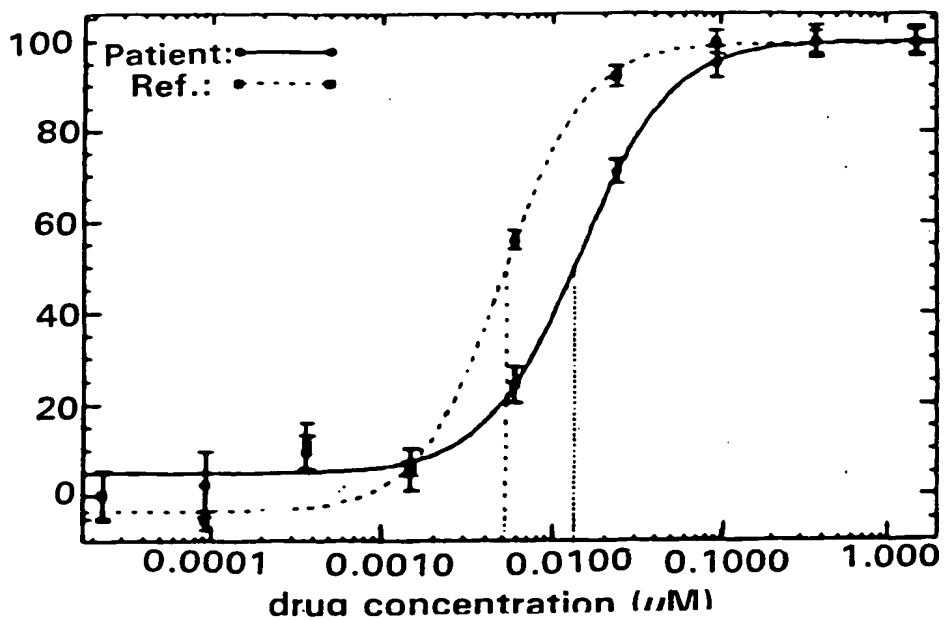


FIG. 5B IDV



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FIG. 5C RTV

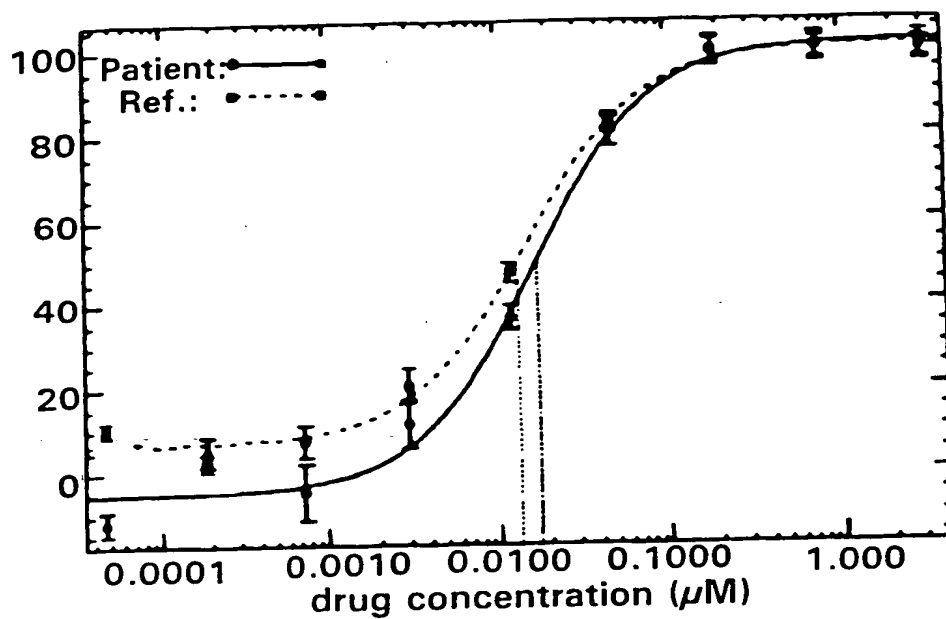
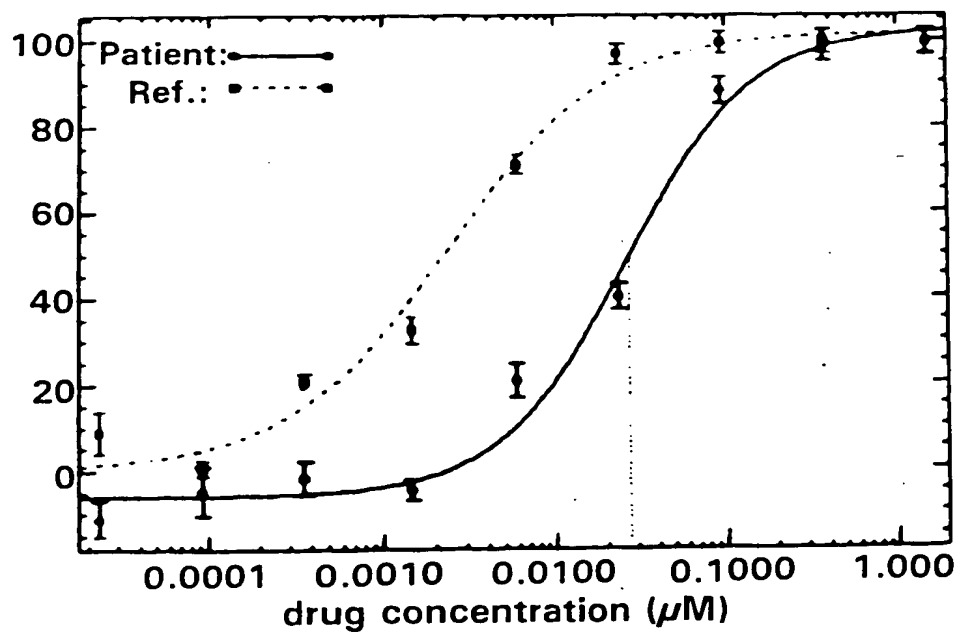


FIG. 5D NFV



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FIG. 5E AMP

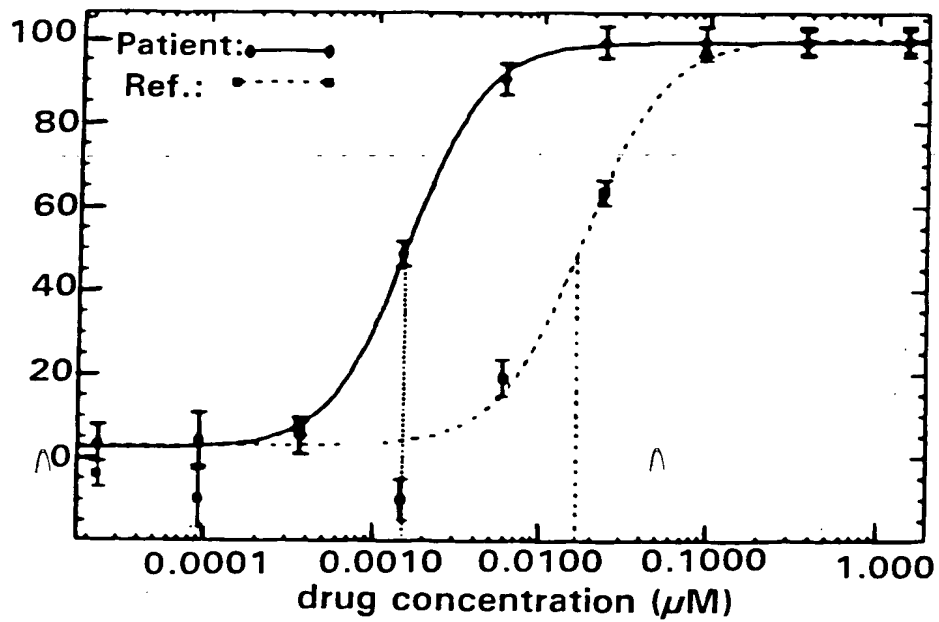
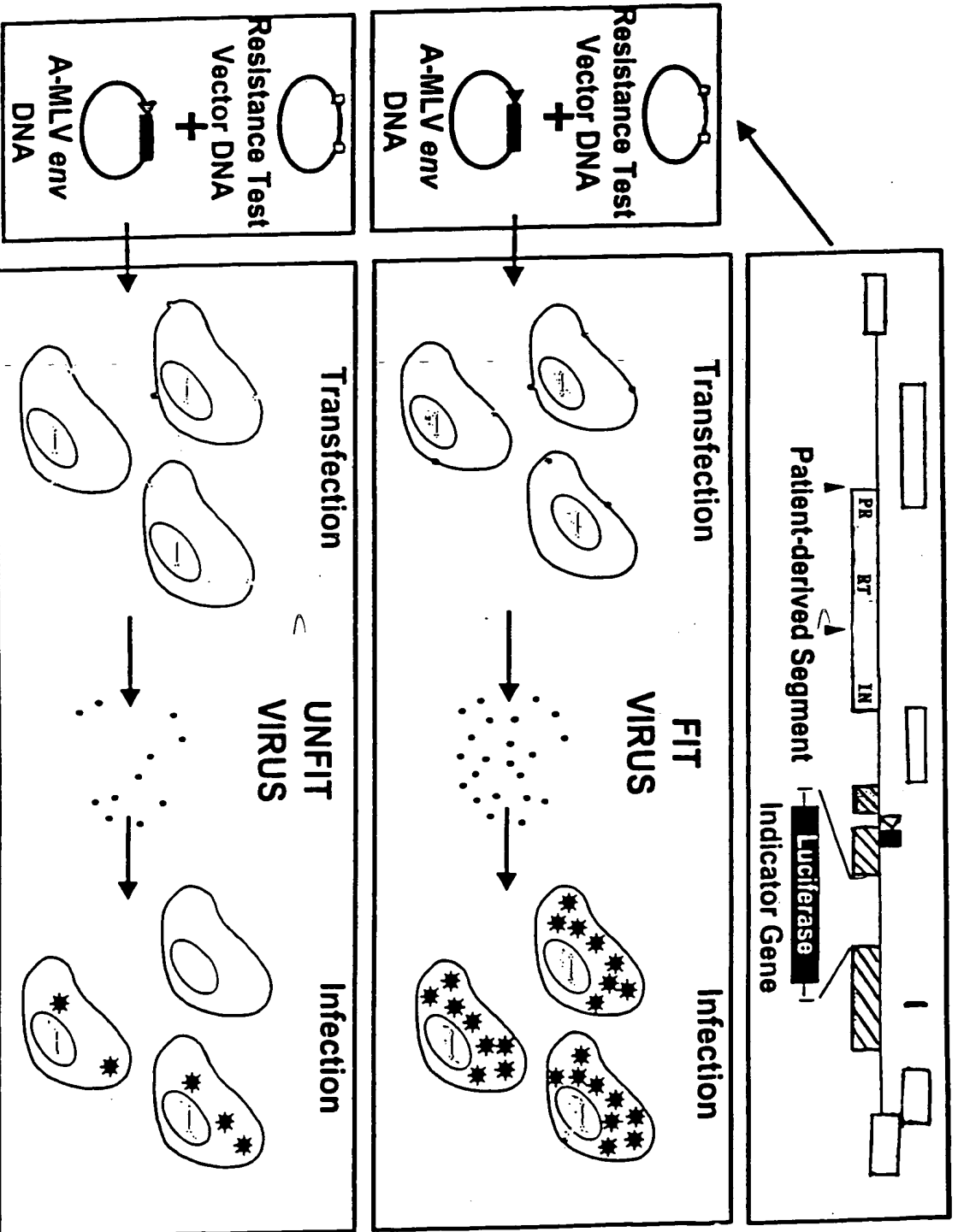


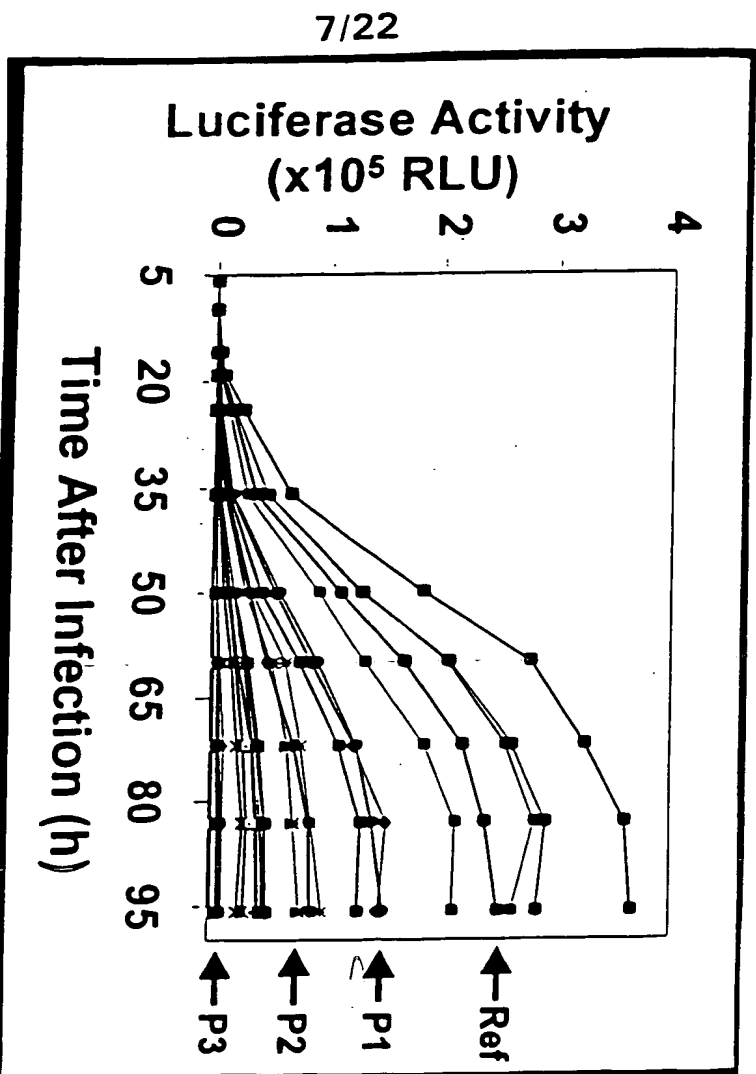
Figure A: Fitness Assay



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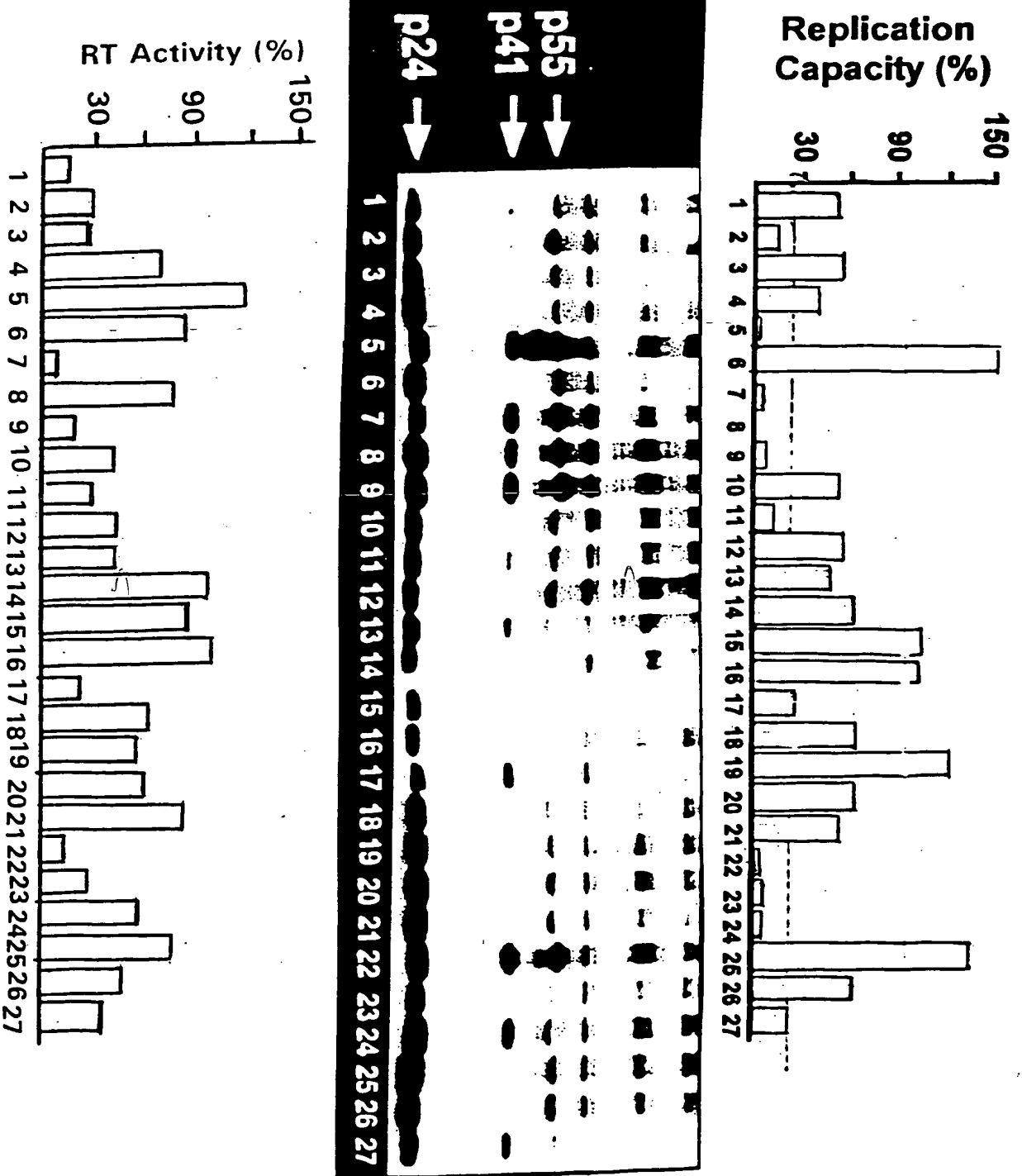
Figure B: Luciferase Activity in Infected Cells



| Fold Resistance | | | | |
|-----------------|-----|------|-----|------|
| | P 1 | P 2 | P 3 | |
| NRTI | AZT | 27 | 17 | 6 |
| | 3TC | >100 | 3 | >100 |
| NNRTI | NVP | 40 | 0.3 | 0.3 |
| | SQV | 17 | 68 | 4 |
| PRI | IDV | 30 | 47 | 39 |
| | RTV | 11 | 62 | 63 |
| | NFV | 57 | 55 | 28 |
| | AMP | 4 | 18 | 3 |

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Figure C: R plication Fitness, PR Processing, and RT Activity

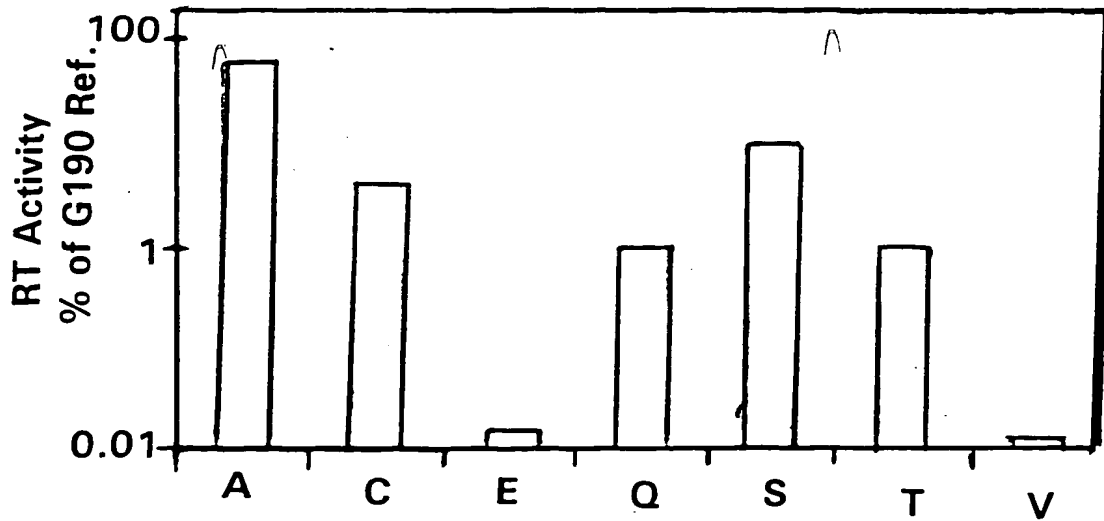
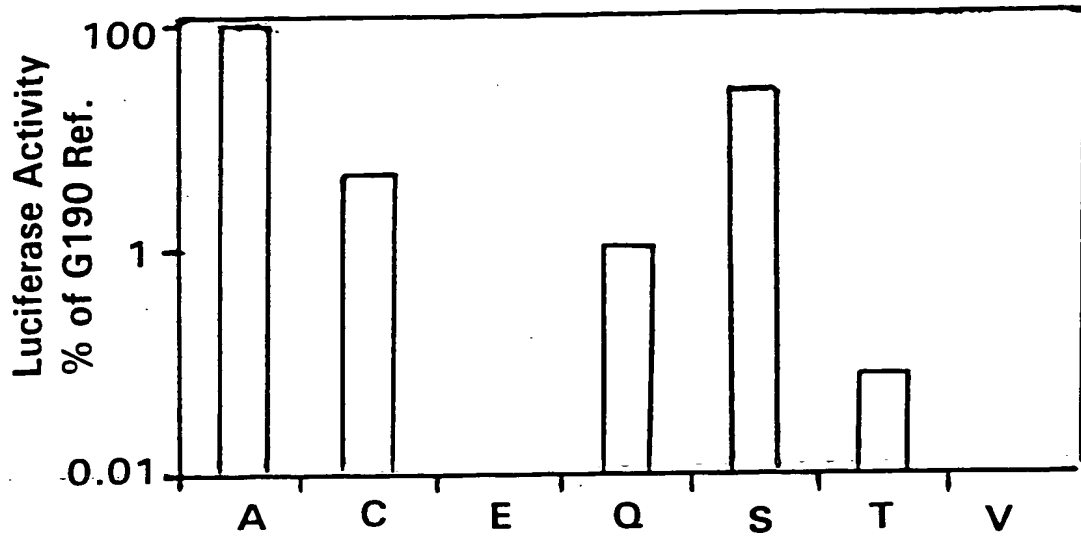


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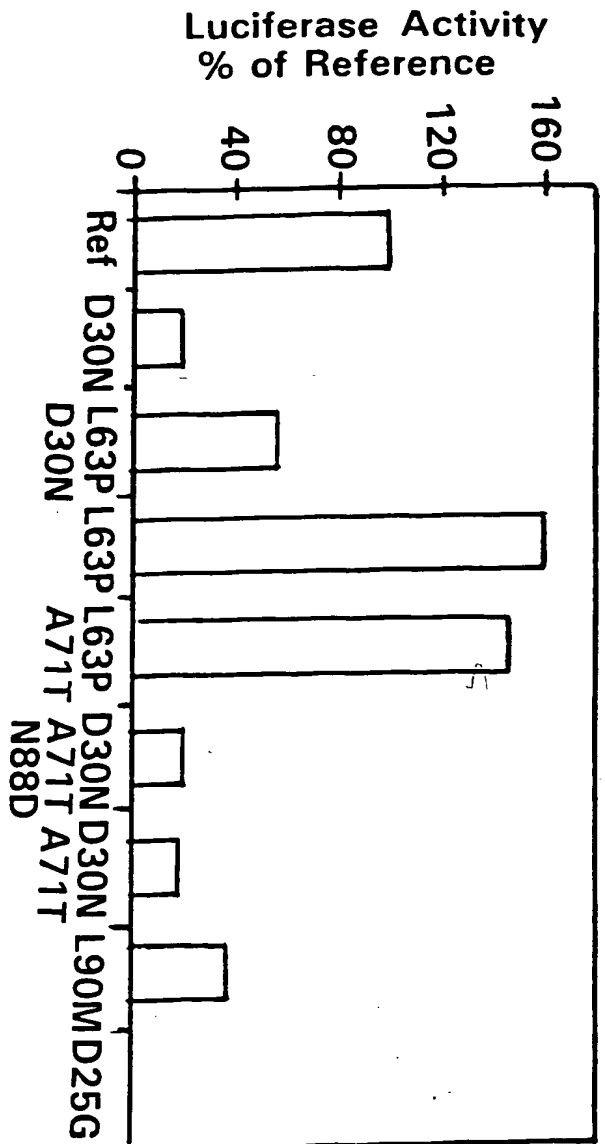
Figure D: Site Directed RT Mutants (G190 Series)



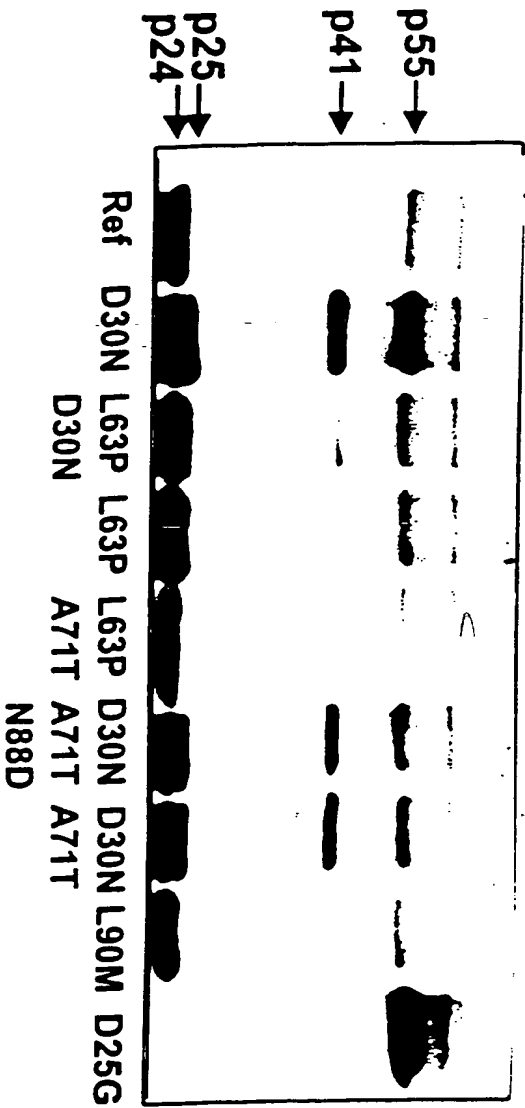
G190 Mutants

| | |
|---------|---------|
| A = Ala | C = Cys |
| E = Glu | Q = Gln |
| S = S r | T = Thr |

Figure E: Site Directed PR Mutants



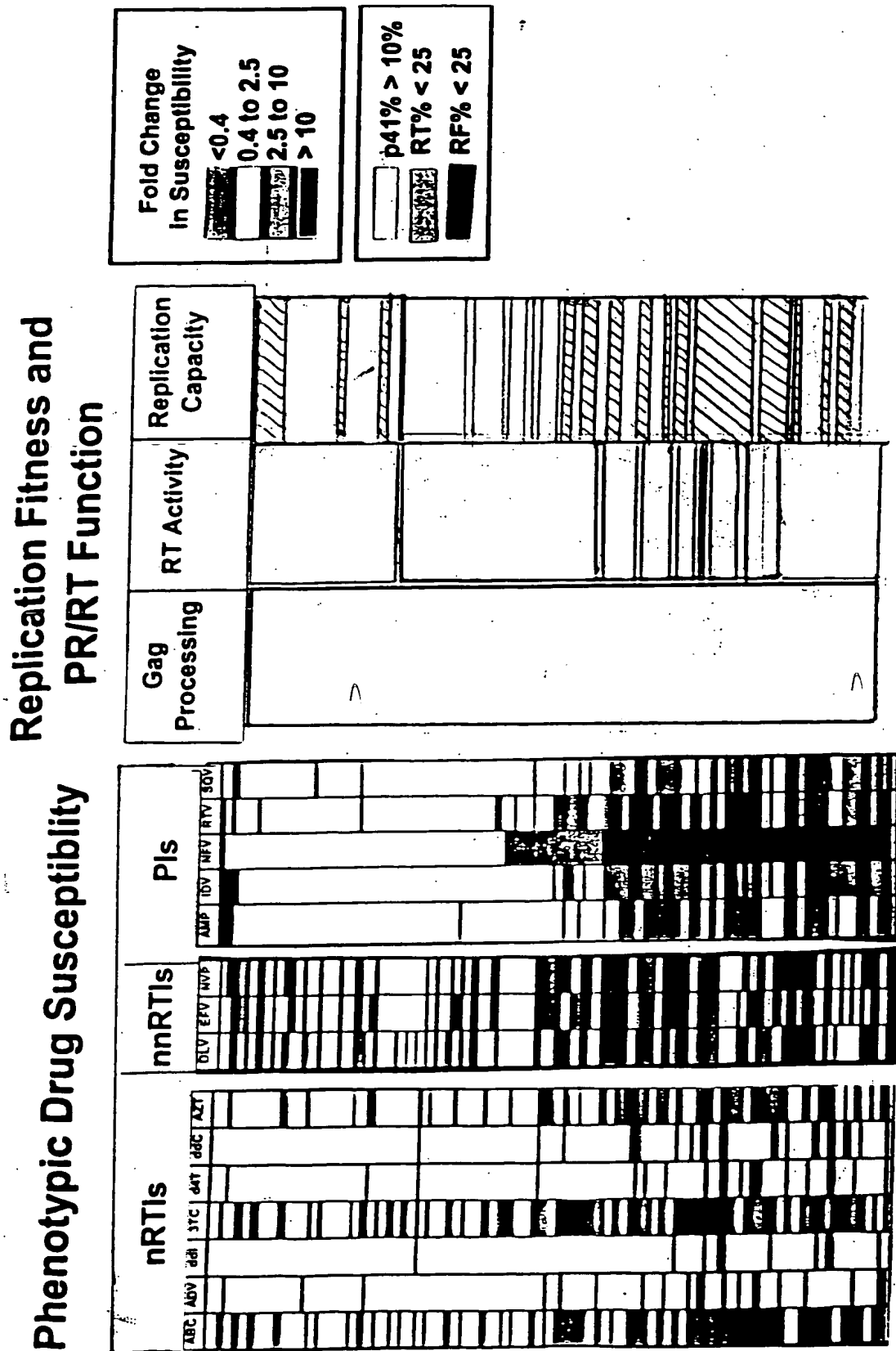
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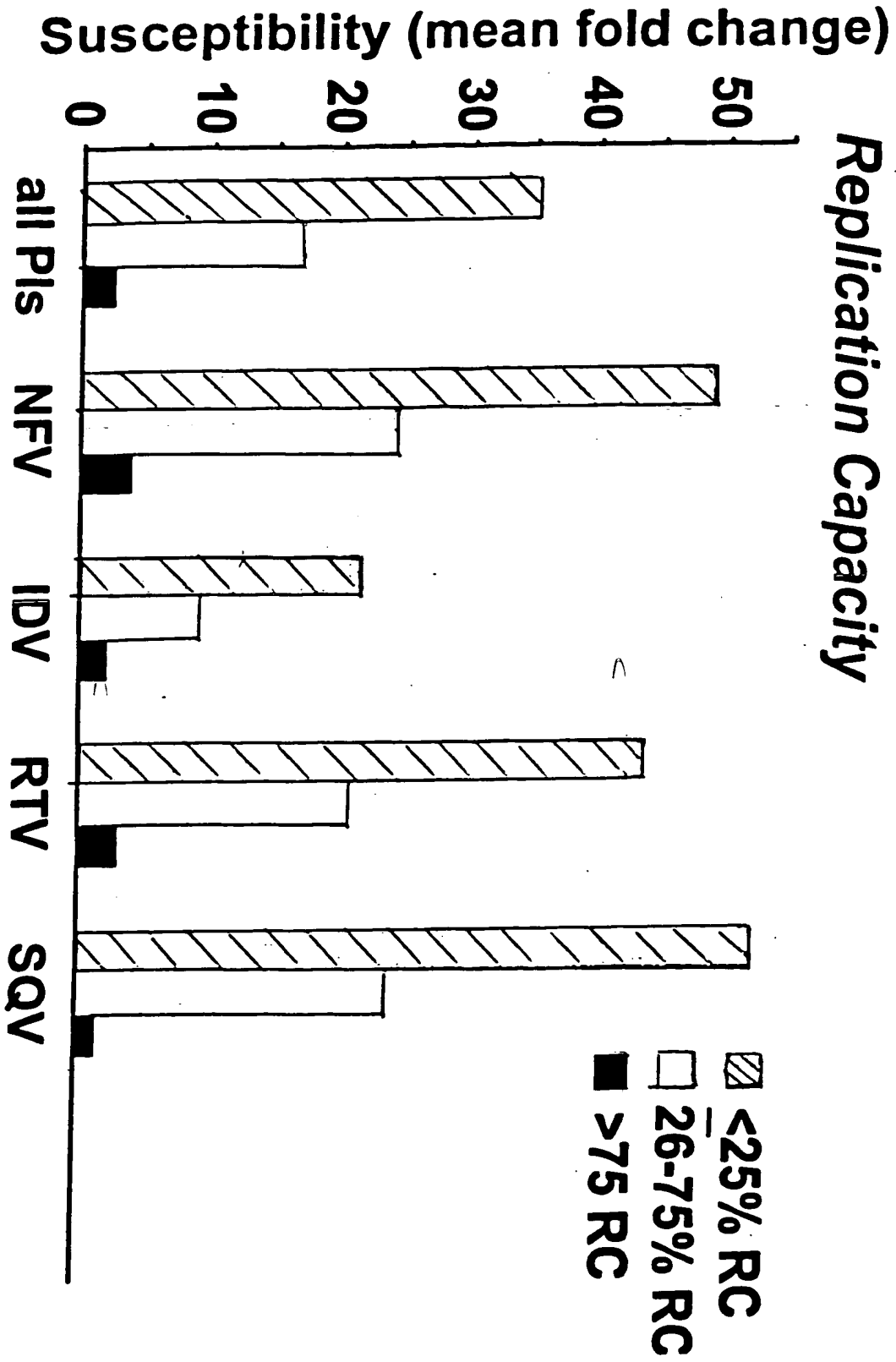
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Figure F: Phenotypic Drug Susceptibility, Replication Fitness and PR/RT Function



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**Figure G: Relation of PI Resistance to
Replication Capacity**



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Figure H: Relation of NRTI and NNRTI Resistance to Replication Capacity

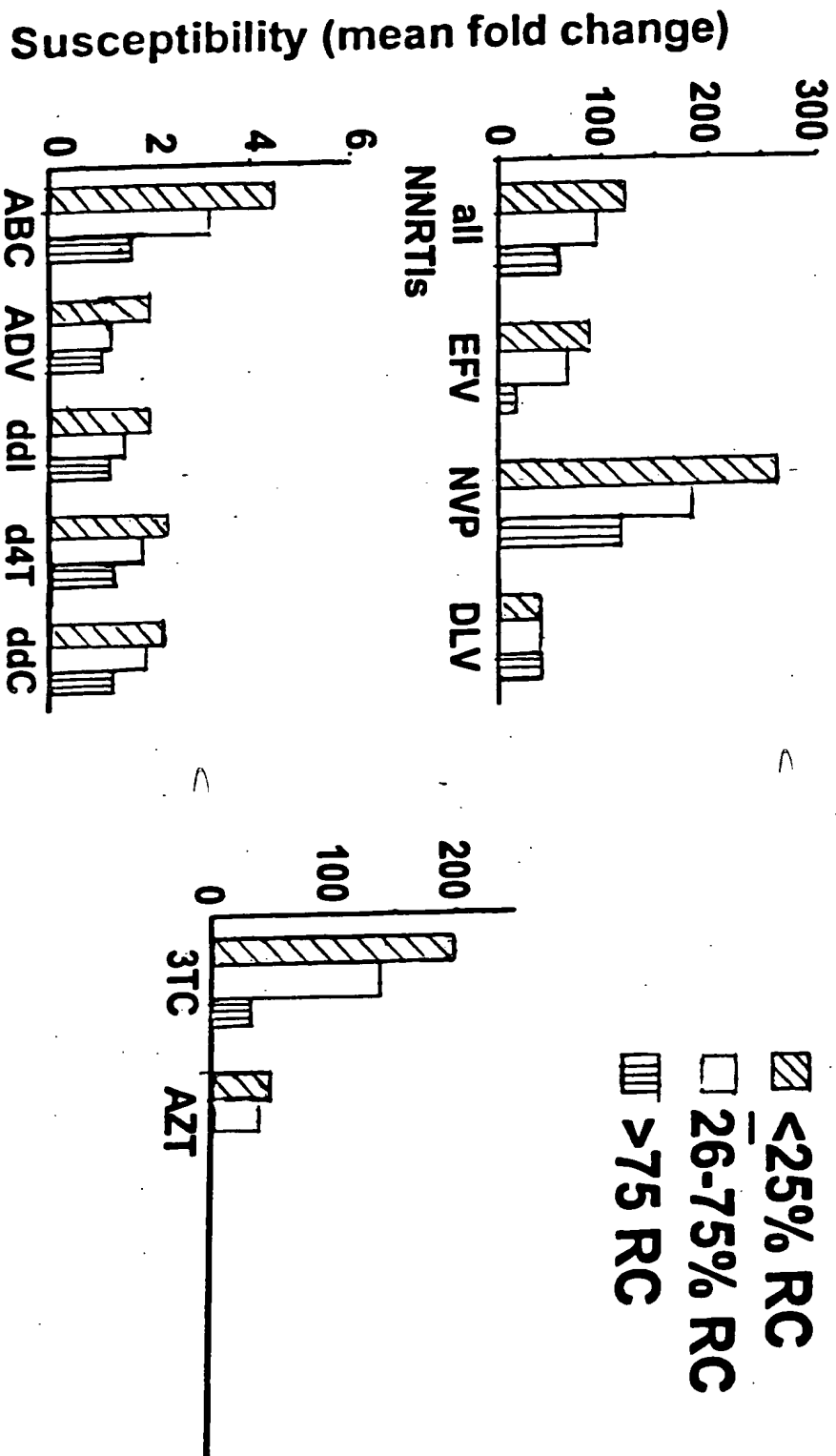
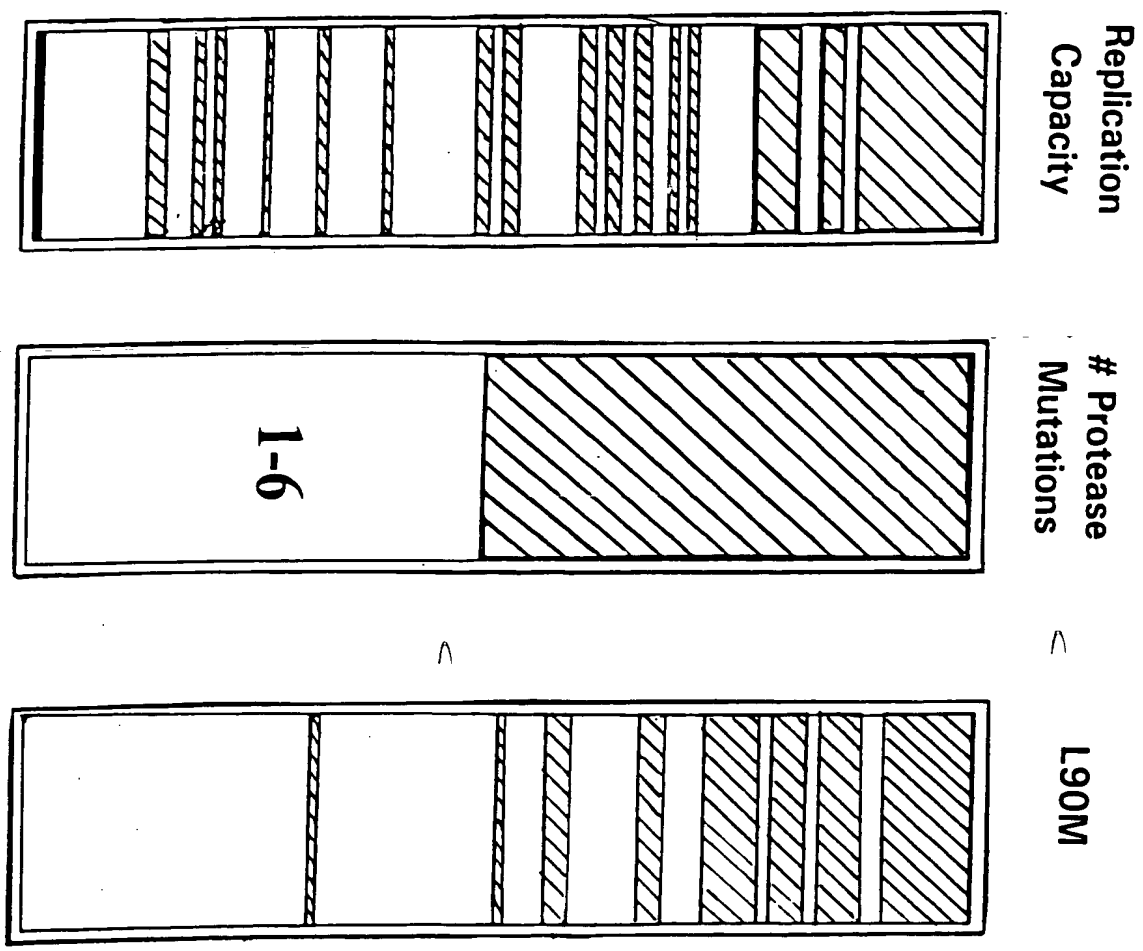


Figure 1: Low Replication Capacity is Associated with High Numbers of Mutations in Protease and L90M



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Figure J: Low Replication Capacity is Associated With Specific Protease Mutations

- **D30N**
- **L90M PLUS mutations at 73, 20, 46, or 88**

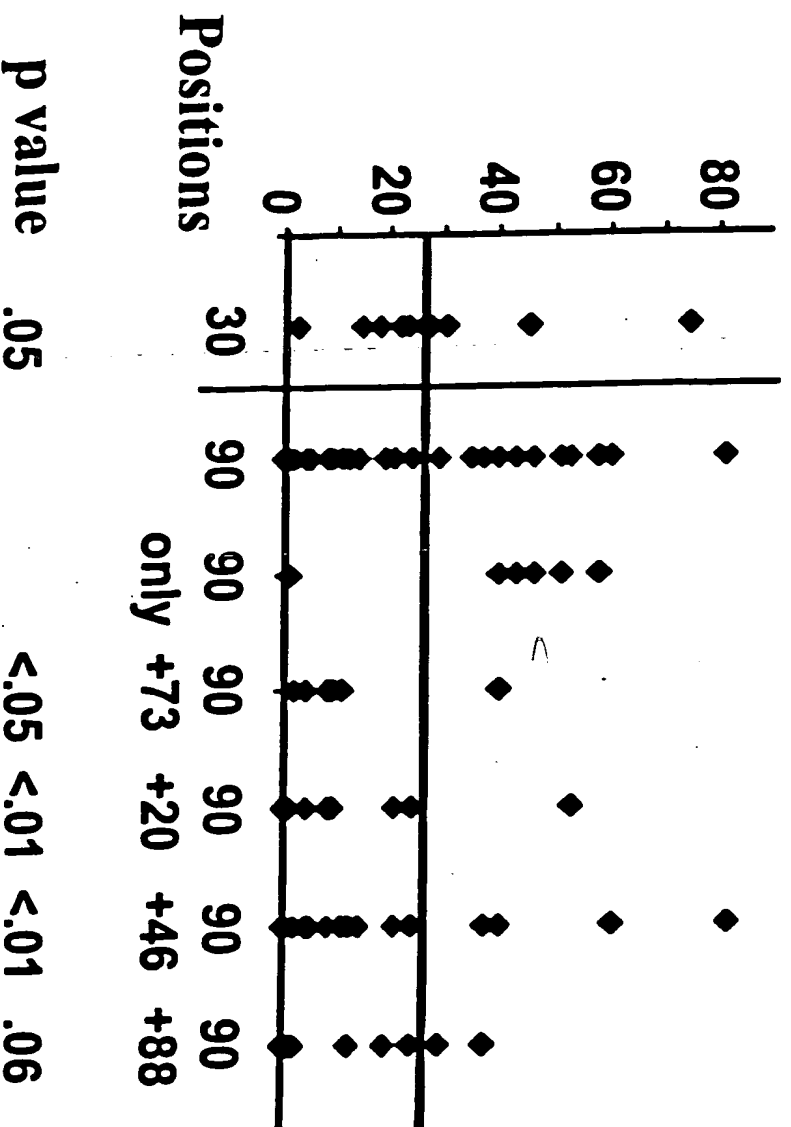


Figure K: Relation of NFV Phenotypic Drug Susceptibility, gag Processing and Replication Fitness

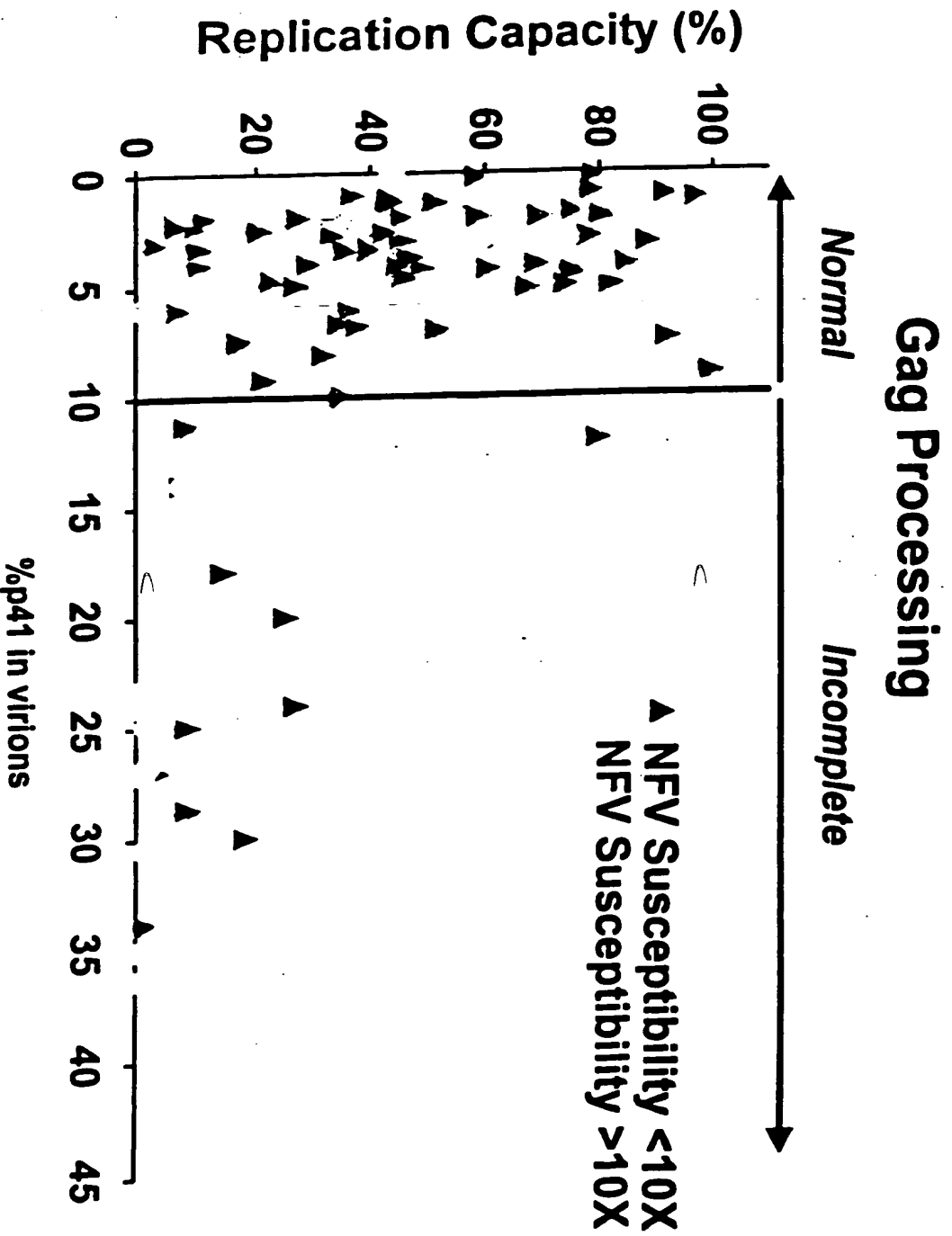
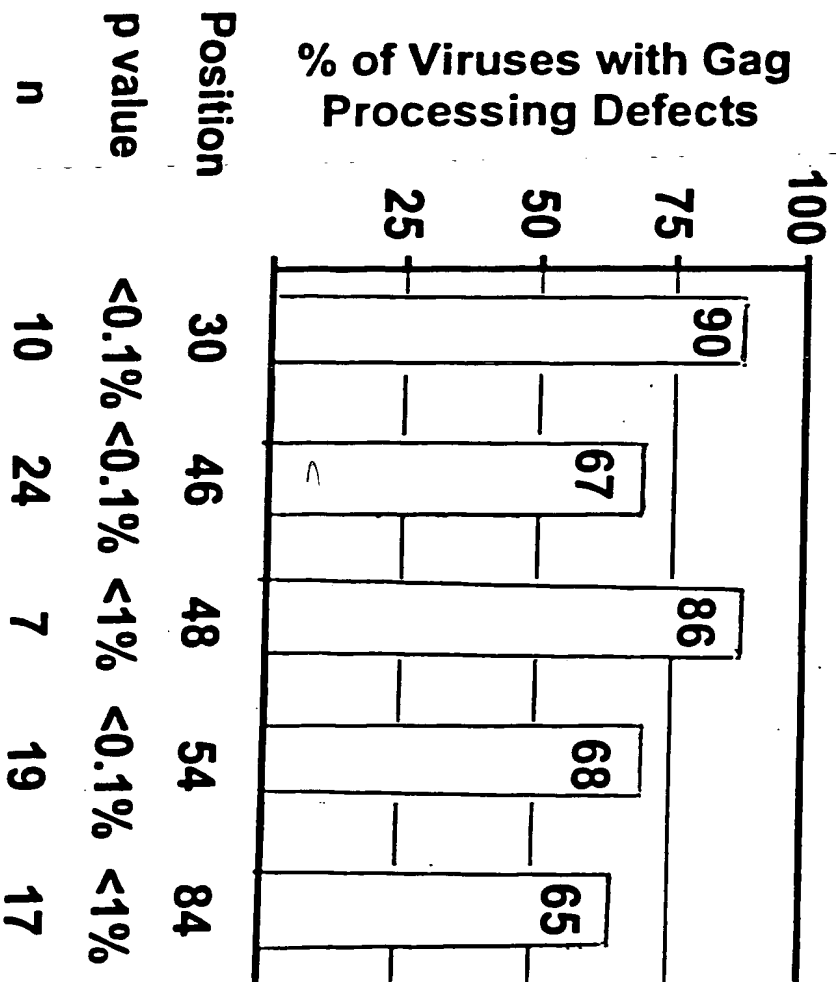


Figure L: Mutations in PR Associated with Gag Processing Defects

D30N M46I/L G48V I54L/A/S/T/V I84V



| | | NRTI | | | NNRTI | | | PI | | | | |
|-------|-----|------|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|
| WEEK | AZT | 3TC | D4T | ABC | NVP | DLV | EFV | SQV | IDV | RTV | NEV | AMP |
| day 0 | 3.7 | >100 | 2.8 | 19 | >300 | 88 | 115 | 85 | 72 | 73 | 74 | 16 |
| 1 | 4.5 | >100 | 3.3 | 20 | >300 | 78 | 134 | 95 | 74 | 59 | 80 | 21 |
| 2 | 5.8 | >100 | 3.2 | 14 | >300 | 75 | 142 | 89 | 77 | 49 | 59 | 19 |
| 3 | 6.5 | >100 | 2.7 | 15 | >300 | 96 | 183 | 59 | 75 | 52 | 51 | 15 |
| 4 | 6.3 | >100 | 3.1 | 15 | >300 | 94 | 174 | 59 | 68 | 50 | 49 | 15 |
| 5 | 6.4 | >100 | 3.0 | 17 | >300 | 76 | 119 | 59 | 60 | 54 | 36 | 10 |
| 6 | 5.0 | >100 | 2.8 | 19 | >300 | 93 | 168 | 89 | 39 | 80 | 40 | 18 |
| 7 | 9.1 | >100 | 4.1 | 12 | >300 | 89 | 154 | 85 | 78 | 53 | 53 | 19 |
| 9 | 2.8 | 8.1 | 1.9 | 5.0 | 22 | 15 | 10 | 1.8 | 3.5 | 4.7 | 4.0 | 2.0 |
| 10 | 1.5 | 1.7 | 1.1 | 1.3 | 1.7 | 2.0 | 1.6 | 0.9 | 1.6 | 1.9 | 1.8 | 1.6 |
| 11 | 0.9 | 1.2 | 1.0 | 1.2 | 0.8 | 1.1 | 0.9 | 1.0 | 1.1 | 1.1 | 1.1 | 1.0 |
| 12 | 0.8 | 1.3 | 0.8 | 1.2 | 0.5 | 1.0 | 0.8 | 0.8 | 0.8 | 0.9 | 1.1 | 0.8 |
| 23 | 0.7 | 1.1 | 1.0 | 0.6 | 0.8 | 1.1 | 0.8 | 0.8 | 0.8 | 1.0 | 0.9 | 0.6 |

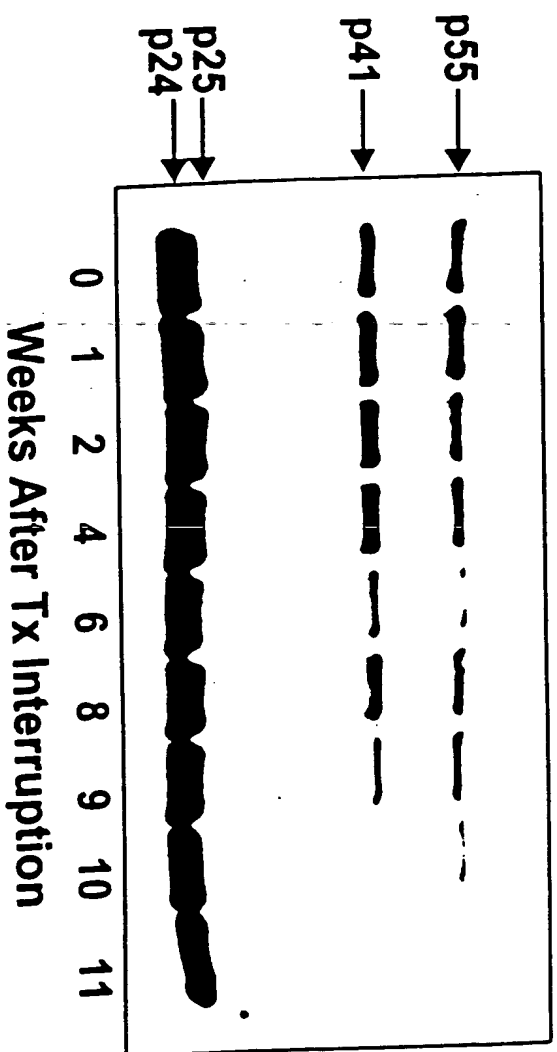
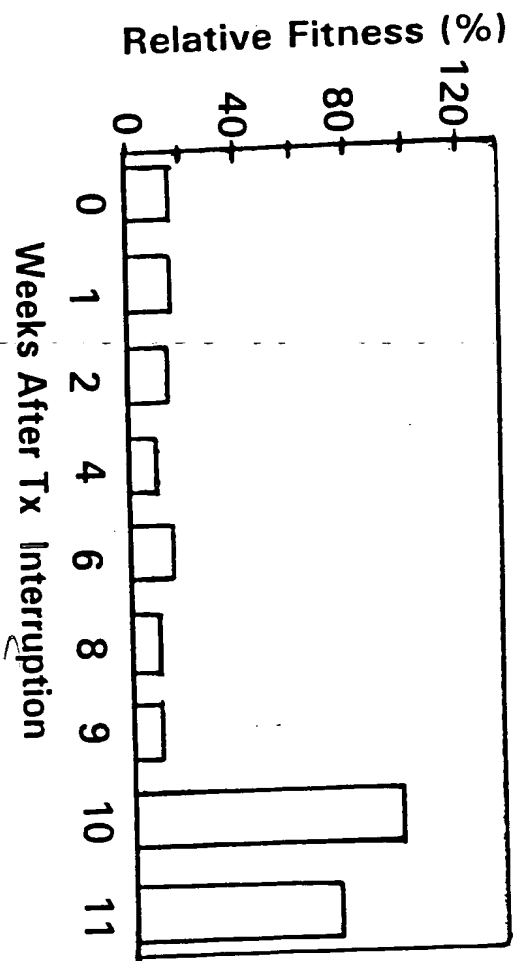
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Figure M: Patient Virus Reversion to Drug Susceptibility after Treatment Interruption

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Figure N: Patient Virus Reversion to Normal Replication Fitness after Treatment Interruption

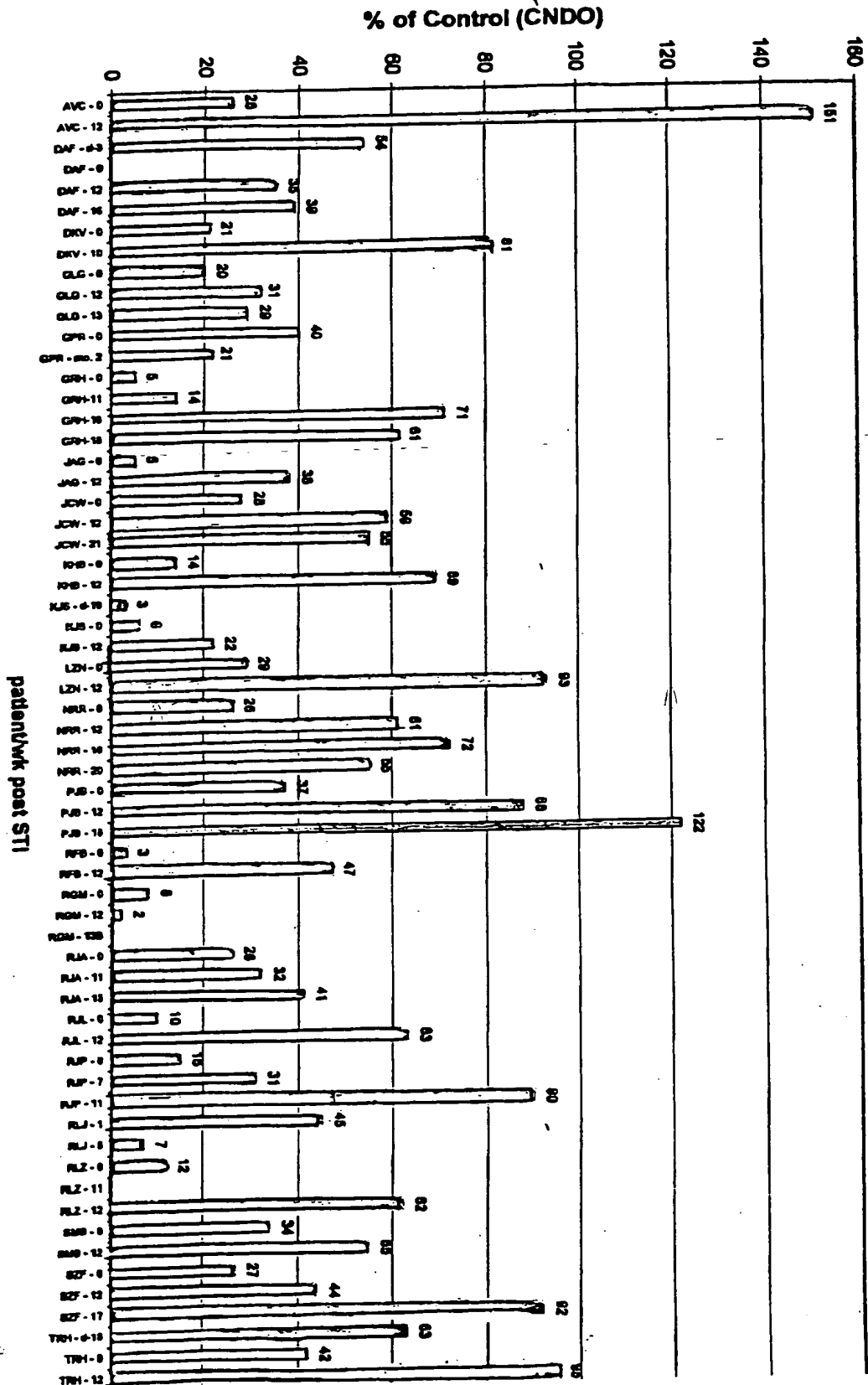


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Fitness on GCRC STI Samples (wk 0 and 12) - Assay #2
RLU corrected for p24 Input (% of control)



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Figur P:

To Measure Replication Capacity of Patient-Derived Recombinant Viruses

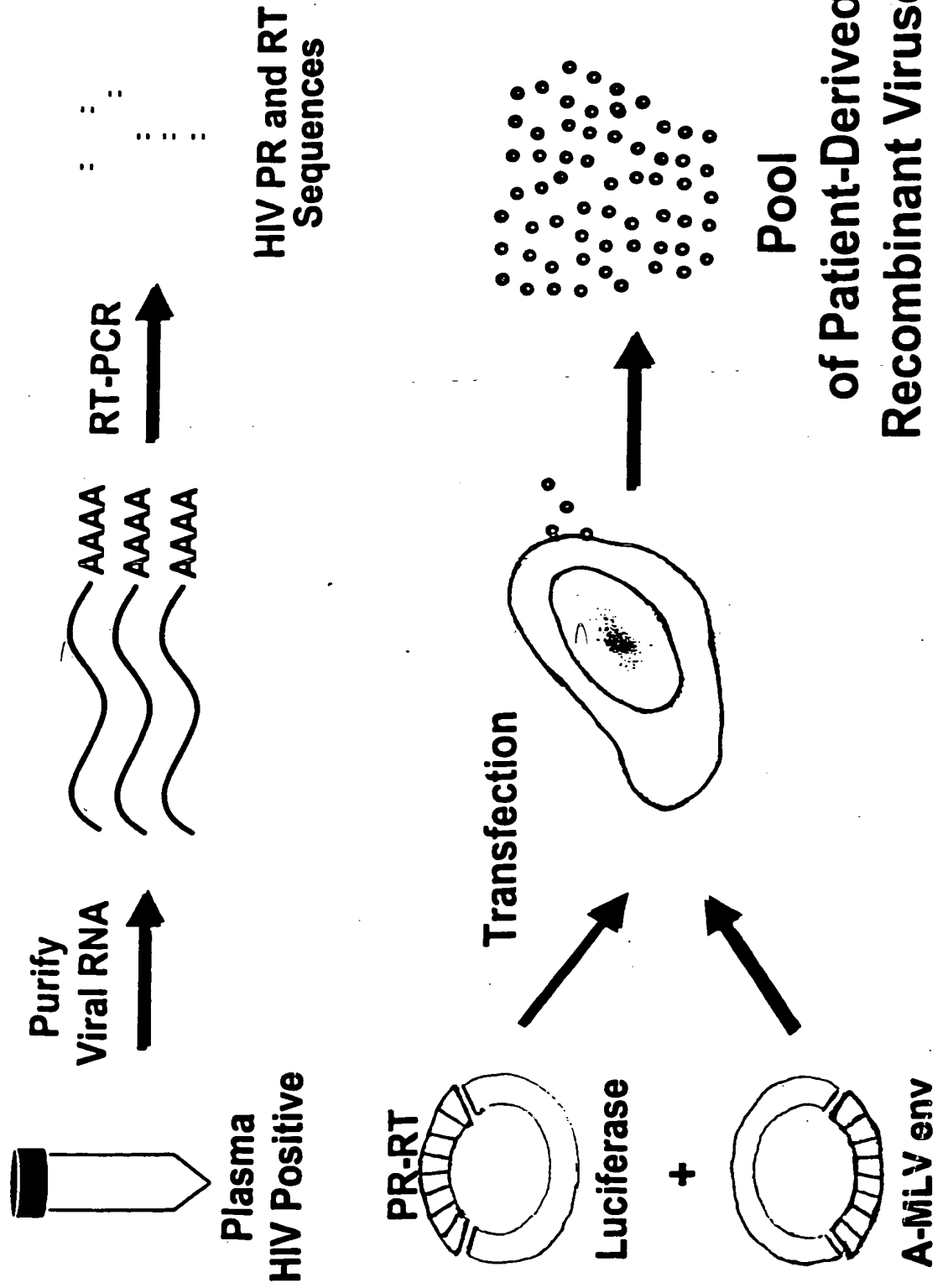


Figure Q: **To Measure Replication Capacity of Patient-Derived Recombinant Viruses**

